T-TYPE CALCIUM CHANNEL

ABSTRACT OF THE DISCLOSURE

The present invention is directed to isolated nucleic acid molecules encoding pancreatic T-type calcium channels. Expression vectors and host cells comprising the nucleic acid molecules are also provided, as well as methods for increasing or decreasing the expression of pancreatic T-type calcium channel in host cells. The invention further provides a method of screening a substance for the ability of the substance to modify T-type calcium channel function, and a method for isolating other pancreatic T-type calcium channel molecules. DNA oligomers capable of hybridizing to the nucleic acid molecule encoding the pancreatic T-type calcium channel are provided, which can be used to detect pancreatic T-type calcium channel in a sample. An isolated pancreatic T-type calcium channel protein is also provided. Antibodies specific for the protein, and fragments thereof, are provided, as are compositions comprising the protein and a compatible carrier. The subject invention further provides a method of modifying insulin secretion by pancreatic beta cells, a method of treating type II diabetes in a subject, a method of modifying basal calcium levels in cells, a method of modifying the action potential of L type calcium channels in cells, a method of modifying pancreatic beta cell death, a method of modifying pancreatic beta cell proliferation, and a method of modifying calcium influx through L type calcium channels in cells.